AMENDMENTS TO THE CLAIMS

1. (Currently amended) A system for adjusting resonant frequencies in a linear compressor comprising, in the interior of a shell: a linear motor ~~(20)~~ supplied by an AC electrical current presenting a predetermined electrical supply frequency; a cylinder ~~(1)~~ within which is defined a compression chamber ~~(CC)~~ closed by a valve plate ~~(2)~~; a piston ~~(10)~~ reciprocating inside the cylinder ~~(1)~~ in consecutive suction and compression strokes; and an actuating means ~~(9)~~ operatively coupling the piston ~~(10)~~ to the linear motor ~~(20)~~, said piston ~~(10)~~ and actuating means ~~(9)~~ forming part of a resonant assembly, ~~characterized in that it comprises~~ comprising:

- a detecting means ~~(D)~~ to detect a load imposed to the linear motor ~~(20)~~ of the compressor, in an operational condition of the latter related to the gas pressure in the discharge thereof; and

- a frequency adjusting means operatively associated with the detecting means ~~(D)~~ and with the resonant assembly, in order to define, as a function of the operational condition detected for the gas in the discharge of the compressor, a frequency adjustment by varying at least one of the values related to the mass of the resonant assembly and to the average stroke of the piston ~~(10)~~, to a value of the mechanical resonance frequency of the resonant assembly corresponding to the electrical supply frequency, maintaining unaltered the minimum distance between the piston ~~(10)~~ and the valve plate ~~(2)~~ at the end of each compression stroke.

2. (Currently amended) A system, as set forth in claim 1, ~~characterized in that~~ wherein the detecting means ~~(D)~~ detects at least one of the conditions of: pressure and temperature of the gas compressed in the discharge of the compressor, and operational electrical current of the linear motor ~~(20)~~.

3. (Currently amended) A system, as set forth in claim 2, ~~characterized in that~~ wherein it comprises a control unit ~~(30)~~ operatively connected to both the detecting means ~~(D)~~ and the adjusting means, in order to receive, from the former, information about one of the operational conditions of: pressure and temperature of the gas in the discharge of the compressor, and operational electrical current of the linear motor ~~(20)~~, and to instruct the adjusting means to provide

one of the operations of varying the average stroke of the piston ~~(10)~~ and varying the mass of the resonant assembly.

4. (Currently amended) A system, as set forth in claim 3, ~~characterized in that~~ wherein the variation of the mass of the resonant assembly is achieved by modifying the mass of at least one of the parts defined by the actuating means ~~(9)~~ and the piston ~~(10)~~.

5. (Currently amended) A system, as set forth in claim 4, ~~characterized in that~~ wherein each part of the resonant assembly, to have its mass modified, comprises an internal chamber ~~(11)~~ containing an equalizing fluid and being maintained in fluid communication with an equalizing fluid reservoir defined in the interior of the compressor shell, the variation of the mass of the resonant assembly being achieved by modifying the mass of the fluid inside the internal chamber ~~(11)~~.

6. (Currently amended) A system, as set forth in claim 5, ~~characterized in that~~ wherein the internal chamber ~~(11)~~ of the piston ~~(10)~~ presents a constant volume, and being maintained in fluid communication with an equalizing fluid impelling means ~~(130)~~ provided in the interior of the shell in fluid communication with the equalizing fluid reservoir, in order to selectively pump said equalizing fluid into and out from said internal chamber ~~(11)~~.

7. (Currently amended) A system, as set forth in claim 6, ~~characterized in that~~ wherein the equalizing fluid is defined by the lubricant oil of the compressor provided in an oil reservoir defined at the bottom of the compressor shell.

8. (Currently amended) A system, as set forth in ~~any one of claims 2 and 3~~ claim 2, ~~characterized in that~~ wherein the variation of the operational stroke of the piston ~~(10)~~ is obtained by modifying the dead point of the piston ~~(10)~~ at the end of the suction stroke.

9. (Currently amended) A system, as set forth in claim 8, ~~characterized in that~~ wherein the

modification of the dead point of the piston ~~(10)~~ at the end of the suction stroke is achieved by an adjusting means in the form of an impeller ~~(I)~~, which is operatively coupled to the resonant assembly and to the control unit ~~(30)~~, so as to be driven by the latter between an inoperative condition, in which it does not produce any alteration in the stroke of the piston ~~(10)~~, and an operative condition, in which it modifies the stroke of the piston ~~(10)~~ for adjusting the mechanical resonance frequency of the resonant assembly to the electrical supply resonance frequency.

10. (Currently amended) A system, as set forth in claim 9, ~~characterized in that~~ wherein the impeller ~~(I)~~ is one of the devices defined by an hydraulic actuator ~~(40)~~, a pneumatic actuator ~~(50)~~, and a mechanical actuator ~~(60)~~.

11. (Currently amended) A system, as set forth in claim 10, ~~characterized in that~~ wherein the hydraulic actuator ~~(40)~~ is maintained in fluid communication with an equalizing fluid reservoir provided in the interior of the shell, said hydraulic actuator ~~(40)~~ being defined in a non-resonant portion of the compressor.

12. (Currently amended) A system, as set forth in claim 11 and in which the resonant assembly comprises a spring means ~~(8)~~ coupling the resonant assembly to the non-resonant assembly ~~(C)~~ of the compressor, ~~characterized in that~~ wherein the hydraulic actuator ~~(40)~~ is operatively coupled to the spring means ~~(8)~~.

13. (Currently amended) A system, as set forth in claim 12 and in which in the bottom of the shell is defined a lubricant oil reservoir, ~~characterized in that~~ wherein the equalizing fluid is defined by the lubricant oil of the compressor.

14. (Currently amended) A system, as set forth in claim 10, ~~characterized in that~~ wherein the pneumatic actuator ~~(50)~~ is maintained in fluid communication with a reservoir, for an equalizing fluid in the form of gas, provided in the interior of the shell, said pneumatic actuator ~~(50)~~ being defined in a non-resonant portion of the compressor.

15. (Currently amended) A system, as set forth in claim 14, in which the resonant assembly comprises spring means ~~(8)~~ coupling the resonant assembly to the non-resonant assembly ~~(C)~~ of the compressor, ~~characterized in that~~ wherein the pneumatic actuator ~~(50)~~ is operatively coupled to the spring means ~~(8)~~.

16. (Currently amended) A system, as set forth in claim 15, ~~characterized in that~~ wherein the pneumatic actuator ~~(50)~~ has a cylinder ~~(91)~~ incorporated to the non-resonant assembly ~~(C)~~ and a plunger ~~(92)~~ axially displaceable in the interior of the cylinder ~~(91)~~ and which operates as a movable stop means onto which is seated the spring means ~~(8)~~ of the resonant assembly.

17. (Currently amended) A system, as set forth in claim 16, ~~characterized in that~~ wherein the pneumatic actuator ~~(50)~~ is a bellows.

18. (Currently amended) A system, as set forth in claim 10, ~~characterized in that~~ wherein the mechanical actuator ~~(60,70, 80)~~ is operatively coupled to the non-resonant assembly ~~(C)~~ and to the spring means ~~(8)~~ and operated by a driving means~~(M)~~, which moves said mechanical actuator ~~(60, 70,80)~~ to different operational positions.

19. (Currently amended) A system, as set forth in claim 18, ~~characterized in that~~ wherein the driving means ~~(M)~~ is one of the devices defined by a motor, a hydraulic actuator, and a pneumatic actuator.

20. (Currently amended) A system, as set forth in claim 19, ~~characterized in that~~ wherein the driving means ~~(M)~~ is operatively connected to the control unit ~~(30)~~.

21. (Currently amended) A system, as set forth in claim 18, ~~characterized in that~~ wherein the mechanical actuator ~~(60,70)~~ comprises one of the elements defined by a cam of linear displacement ~~(61, 61')~~ and a rotary cam ~~(71)~~ coupled to the non-resonant assembly ~~(C)~~ of the compressor, as well

as a slide ~~(64,72)~~ defining a cam follower coupling one of said elements defined by the cam of linear displacement ~~(61, 61')~~ and the rotary cam ~~(71)~~ to the spring means ~~(8)~~.

22. (Currently amended) A system, as set forth in claim 21, ~~characterized in that~~ wherein the cam of linear displacement ~~(61)~~ is provided with steps ~~(62)~~ which are dimensioned so as to define different positions for the dead point of the piston ~~(10)~~ at the end of the suction stroke.

23. (Currently amended) A system, as set forth in claim 22, ~~characterized in that~~ wherein the slide ~~(64)~~ associated with the cam of linear displacement ~~(61)~~ carries a contact portion ~~(64a)~~ in a surface of said slide ~~(64)~~ confronting with the cam of linear displacement ~~(61)~~.

24. (Currently amended) A system, as set forth in claim 23, ~~characterized in that~~ wherein the contact portion ~~(64a)~~ is a convex surface portion incorporated to the surface of the slide ~~(64)~~ confronting with the cam of linear displacement ~~(61)~~.

25. (Currently amended) A system, as set forth in claim 21, ~~characterized in that~~ wherein the cam of linear displacement~~(61')~~ presents one ramp surface ~~(63')~~ which is slidingly seated against a confronting inclined surface ~~(66)~~ of the slide ~~(64')~~ of axial displacement.

26. (Currently amended) A system, as set forth in claim 21, ~~characterized in that~~ wherein the rotary cam ~~(71)~~ is provided with a continuous ramp ~~(71a)~~ which is dimensioned so as to define, continuously, by actuating on the slide ~~(72)~~, different positions for the dead point of the piston ~~(10)~~ at the end of the suction stroke.

27. (Currently amended) A system, as set forth in claim 18, ~~characterized in that~~ wherein the mechanical actuator comprises a mechanical stop means ~~(80)~~ threaded to the non-resonant assembly ~~(C)~~ and which is operatively coupled to the resonant assembly in order to alter the dead point of the piston ~~(10)~~ at the end of the suction stroke, when rotated around its longitudinal axis.

28. (Currently amended) A system, as set forth in claim 10, ~~characterized in that~~ wherein the equalizing fluid is the refrigerant gas compressed by the compressor.

29. (Currently amended) A system, as set forth in claim 28, ~~characterized in that~~ wherein it comprises a control valve ~~(100)~~ maintained in fluid communication with the cylinder ~~(91)~~ of the pneumatic actuator ~~(90)~~ through at least one opening ~~(93)~~ of said cylinder ~~(91)~~, a control valve ~~(100)~~ lodging a sealing means ~~(110)~~ which is selectively displaced between a closed position, a pressurization position and a depressurization position, in order to, selectively, block the opening ~~(93)~~ of the cylinder ~~(91)~~ upon discharge of the compressor and communicate the interior of the cylinder ~~(91)~~ with the interior of the compressor shell.

30. (Currently amended) A system, as set forth in claim 29, ~~characterized in that~~ wherein the sealing means ~~(110)~~ is a slide provided with an internal passage ~~(111)~~ and which is linearly displaceable in one and in the other direction, by the discharge gas pressure and by the return elastic means ~~(120)~~, in order to provide the alignment and disalignment of said internal passage ~~(111)~~ in relation to the opening ~~(93)~~.